

Amendments to the Claims:

Please amend claims 8 and 12 as follows.

This listing of claims replaces all prior versions, and listings, of claims in the application.

Listing of claims:

1. - 7. (canceled)

8. (currently amended) A network controller having transmitting and receiving buffers, comprising an internal arbiter monitoring the transmitting and receiving buffers, and arbitrating access to a system bus between the transmitting and receiving buffers in response to requests for access to the system bus from the transmitting and receiving buffers,

wherein the internal arbiter comprises:

an emergency mode determination circuit receiving an occupancy level of data in the receiving buffer and a vacancy level of data in the transmitting buffer, determining whether a present operational state corresponds to an emergency mode as a function of the occupancy level and the vacancy level, and outputting an emergency mode signal on an emergency mode signal line;

a first determination circuit for determining if the occupancy level of the receiving buffer is increasing, and outputting a result of the determination as a first signal on a first signal line, the first signal indicating whether the occupancy level of the receiving buffer is increasing;

a second determination circuit for determining if the vacancy level of the transmitting buffer is increasing by comparing the vacancy level of the transmitting buffer with a previous transmitting buffer vacancy level that is stored in the second determination circuit and for outputting a result of the determination as a second signal on a second signal line, the second signal indicating whether the vacancy level of the transmitting buffer is increasing;

a comparing circuit comparing the vacancy level of the transmitting buffer with the occupancy level of the receiving buffer and outputting a comparison result signal on a

comparison result signal line that indicates which of the occupancy level of the receiving buffer and the vacancy level of the transmitting buffer is greater; and

a logic circuit coupled to the emergency mode signal line, the first signal line, the second signal line, and the comparison result signal line, and outputting a permission signal to the receiving buffer or the transmitting buffer in response to a combination of the emergency mode signal, the first signal indicating whether the occupancy level of the receiving buffer is increasing, the second signal indicating whether the vacancy level of the transmitting buffer is increasing, and the comparison result signal, the permission signal granting access to the system bus to one of the transmitting buffer and receiving buffer.

9. (original) The network controller of claim 8, wherein the emergency mode determination circuit comprises:

a first comparing circuit comparing the occupancy level of the receiving buffer with a threshold occupancy level of the receiving buffer and outputting a first comparison result signal;

a second comparing circuit comparing the vacancy level of the transmitting buffer with a threshold vacancy level of the transmitting buffer and outputting a second comparison result signal; and

an AND means performing an AND operation on the first and second comparison result signals output by the first and second comparing circuits and outputting the emergency mode signal.

10. (previously presented) The network controller of claim 8, wherein the first determination circuit comprises:

a register storing a previous occupancy level of the receiving buffer; and

a comparing circuit comparing an output of the register with the occupancy level of the receiving buffer and outputting the first signal.

11. (previously presented) The network controller of claim 8, wherein the second determination circuit comprises:

a register storing the previous transmitting buffer vacancy level; and
a comparing circuit comparing an output of the register with the vacancy level of the
transmitting buffer and outputting the second signal.

12. (currently amended) A method of controlling at least one of a transmitting
buffer and a receiving buffer of a network controller, comprising:

receiving at least one request for access of a system bus from the transmitting buffer and
the receiving buffer; and

determining a vacancy level of data in the transmitting buffer and an occupancy level of
data in the receiving buffer and granting access to the system bus to one of the transmitting buffer
and the receiving buffer, wherein granting access to the system bus comprises:

determining a present operational state as an emergency mode when both the
transmitting buffer and receiving buffer request access to the system bus, when the
occupancy level of the receiving buffer is higher than a threshold occupancy level of the
receiving buffer, and when the vacancy level of the transmitting buffer is higher than a
threshold vacancy level of the transmitting buffer, and, in response, generating an
emergency mode signal; and

when the operational state is determined as the emergency mode[[,]]:

comparing the occupancy level of data in the receiving buffer with the
vacancy level of data in the transmitting buffer, and, in response, generating a
comparison result signal that indicates which of the occupancy level of data in the
receiving buffer and the vacancy level of data in the transmitting buffer is greater,
and wherein if the comparison result signal indicates that the occupancy level of
data in the receiving buffer is greater than the vacancy level of data in the
transmitting buffer, then determining if the occupancy level of the receiving buffer
is increasing by comparing the occupancy level of the receiving buffer with a
previous receiving buffer occupancy level, and, in response, generating a first
signal that indicates whether the occupancy level of the receiving buffer is
increasing, and wherein if the comparison result signal indicates that the

occupancy level of data in the receiving buffer is not greater than the vacancy level of data in the transmitting buffer, then determining if the vacancy level of the transmitting buffer is increasing by comparing the vacancy level of the transmitting buffer with a stored previous transmitting buffer vacancy level, and, in response, generating a second signal that indicates whether the vacancy level of the transmitting buffer is increasing; and

granting access to the system bus to one of the transmitting buffer and the receiving buffer in response to a combination of the emergency mode signal, the first signal indicating whether the occupancy level of the receiving buffer is increasing, the second signal indicating whether the vacancy level of the transmitting buffer is increasing, and the comparison result signal.

13. (previously presented) The method of claim 12, wherein when the present operational state does not correspond to the emergency mode, the occupancy level of the receiving buffer is compared with the vacancy level of the transmitting buffer, and one of the transmitting and receiving buffers is granted access to the system bus, and wherein

the receiving buffer is granted access to the system bus when the occupancy level of the receiving buffer is higher than the vacancy level of the transmitting buffer, and the transmitting buffer is granted access to the system bus when the vacancy level of the transmitting buffer is higher than the occupancy level of the receiving buffer.

14. (previously presented) The method of claim 12, wherein when the present operational state corresponds to the emergency mode, the occupancy level of the receiving buffer is compared with the vacancy level of the transmitting buffer, and one of the transmitting and receiving buffers is granted access to the system bus based on the comparison result, and wherein

when the occupancy level of the receiving buffer is higher than the vacancy level of the transmitting buffer, the receiving buffer is granted access to the system bus if the occupancy level of the receiving buffer is increasing; and

when the occupancy level of the receiving buffer is not higher than the vacancy level of the transmitting buffer, the transmitting buffer is granted access to the system bus if the vacancy level of the transmitting buffer is increasing.

15. (previously presented) The method of claim 14, wherein when the occupancy level of the receiving buffer is higher than the vacancy level of the transmitting buffer, the transmitting buffer is granted access to the system bus if the occupancy level of the receiving buffer is not increasing; and

when the occupancy level of the receiving buffer is not higher than the vacancy level of the transmitting buffer, the receiving buffer is granted access to the system bus if the vacancy level of the transmitting buffer is not increasing.

16. (previously presented) A computer readable recording medium recording a program that can execute a method of claim 12 using a computer.

17. (previously presented) The method of claim 12 wherein granting access to the system bus comprises receiving the request for access to the system bus from at least one of the transmitting and receiving buffers and granting access of the system bus to the one of the transmitting and receiving buffers sending the request.